

PRACTICE EXAM 20: AUTOMOTIVE SERVICE TECHNICIAN (125 QUESTIONS)

Allow four hours. Select one answer, A, B, C or D, for each question. Use the data and assumptions supplied. Complete the paper before reading its answer key. At least 88 correct answers meet a 70% practice threshold; these independent questions are not official examination items.

1. A vehicle clunks during drive-to-reverse torque changes. Mount movement exceeds the supplied limit, while spline play and shaft joints pass. What is strongest?

- A. The excessive powertrain mount movement.
- B. A spline-wear fault despite its passing result.
- C. Normal mount behaviour because the fasteners are present.
- D. A shaft-joint defect already not supported.

2. A diesel glow plug supports which principal operating requirement in its designed application?

- A. Drive the crankshaft mechanically as the starter function.
- B. Raise charge-air pressure through the turbocharger compressor.
- C. Heating associated with the engine's specified starting strategy.
- D. Screen particulate fuel contamination before injection.

3. An automatic transmission range report shows reverse while its linkage is physically at neutral. The supplied adjustment check fails, and the internal range signal follows the mispositioned linkage. What is strongest?

- A. A normal neutral selection.
- B. A clutch-friction wear issue as proof of linkage geometry.
- C. An isolated software display error despite matching internal signal.
- D. The external linkage or adjustment relationship.

4. A heated-seat load works when supplied through the approved test path. Its normal relay input has correct voltage, but output remains low under load and the specified contact-loss check fails. What is strongest?

- A. The relay's switched path or immediate connection.
- B. A common supply absence already excluded.
- C. Normal relay function because its coil command is present.
- D. A defective heating element despite its verified test operation.

5. A gasoline throttle body controls the main intake opening in its designated arrangement. What quantity is directly influenced by its plate position?

- A. The recirculated-exhaust opening at a separate EGR valve.
- B. The opening available for intake airflow.
- C. The fuel opening inside a separately commanded injector.
- D. The fixed physical displacement of the engine cylinders.

6. A suspension repair changes a sensor's mounted reference and requires calibration. What should final verification include?

- A. Only a level-looking exterior bracket.
- B. The prescribed mechanical condition, calibration and system checks.
- C. Calibration used without correcting a damaged mount.
- D. Only code clearing.

7. A piston moves between top and bottom dead centre. What does the engine's stroke dimension describe?

- A. The distance between those two piston positions.
- B. The crankpin's radial distance from the main axis.
- C. The intake valve's travel at maximum lift.
- D. The cylinder's internal bore diameter.

8. A driveshaft noise is absent in a controlled stationary engine-speed test but appears at the same road speed in two different gears. A shaft bearing fails its roughness check. What is strongest?

- A. An engine-rpm-only fault despite differing gear relationships.
- B. Normal shaft support because the vehicle can move.
- C. The road-speed-related shaft bearing.
- D. A single gear synchronizer as proof of the shared road-speed noise.

9. A connector repair specifies particular terminal plating and wire size. What should the replacement use?

- A. An oversized terminal forced into the housing.
- B. Any terminal that fits the cavity loosely.
- C. Wire selected only by insulation colour.
- D. The approved component specification and assembly method.

10. A transmission pan repair specifies a gasket and a controlled bolt sequence. What should assembly use?

- A. The required gasket, surface preparation and tightening method.
- B. An extra sealant bead regardless of instruction.
- C. Only the final corner bolt's torque.
- D. Higher bolt force to overcome a distorted pan.

11. A repaired transmission requires a post-assembly selector check. What should the technician verify?

- A. Only the installation's exterior appearance.
- B. The old adjustment left unchanged without checking the repaired assembly.
- C. The prescribed positions, indications and relevant operation.
- D. Only that the handle can move.

12. A diagnostic model runs a 2 kW heater steadily for 45 minutes. What energy is used in that interval?

- A. 3.0 kWh
- B. 0.75 kWh
- C. 2.0 kWh
- D. 1.5 kWh

13. A repaired module is configured for a network option not installed on the actual vehicle. Wiring and supplies pass, but its messages request absent equipment and the prescribed configuration comparison fails. What is strongest?

- A. Normal setup because the module can transmit.
- B. The module configuration does not match the installed vehicle.
- C. A proven common wiring short despite passing checks.
- D. The absent equipment must be installed instead of correcting the specified setup.

14. A supplied ideal air-mixing model has equal heat-capacity flows: two units at 20 C and one at 80 C. What mixed temperature should be compared with the observed outlet under that model?

- A. 40 C
- B. 60 C
- C. 50 C
- D. 30 C

15. After a suspension impact, camber is outside the supplied range and inspection shows a bent control arm. Ride height and tire condition pass. What is strongest?

- A. Calibration alone as a repair for the bent component.
- B. A normal arm because its fasteners remain installed.
- C. A tire pressure fault already excluded.
- D. The damaged arm's effect on the measured geometry.

16. A fuel-pump test has 12 V across the motor and measures 4 A under its supplied model. What operating resistance corresponds to those values?

- A. 0.333 ohm
- B. 48 ohms
- C. 3 ohms
- D. 4 ohms

17. A transmission shows a commanded gear change, but the measured input-to-output ratio remains at the previous gear. Command reception passes and the next gear's apply pressure is below its supplied limit. What is strongest?

- A. Normal completed shifting because the command changes.
- B. The requested gear's apply path fails to establish the commanded state.
- C. A wheel-speed sensor as the only source despite measured shaft speeds.
- D. An engine thermostat explaining the apply pressure failure.

18. A lamp circuit repair moves its harness through a sharp body opening. What should restoration establish?

- A. Only the wire's original colour.
- B. Only that the lamp lights once.
- C. The required routing support and edge protection.
- D. A tighter bundle against the bare edge.

19. An isolated network's specified resistance is 60 ohms. It measures open, and continuity checks show both terminating paths separated by a broken shared connection. What is best supported?

- A. A software-routing fault explaining disconnected continuity.
- B. An added termination reducing resistance.
- C. A normal network resistance.
- D. The shared interruption prevents access to the termination paths.

20. A fuel-pressure regulator operates in its specified system. What is its primary control purpose?

- A. Pulse the injector's current to determine its opening interval.
- B. Maintain the required fuel-pressure relationship.
- C. Vent the tank's designated vapour path to its canister.
- D. Screen particulate contamination in the fuel filter element.

21. A cabin-temperature report stays at 5 C while the supplied reference is 25 C. The sensor itself follows its stated resistance curve, but its signal path is shorted to the documented low-reference response. What is strongest?

- A. The signal-path short causing an incorrect reported temperature.
- B. A compressor mechanical fault explaining the wire short.
- C. Normal cabin measurement matching the reference.
- D. A sensor element conclusively failed despite its correct curve.

22. A brake slide-pin boot is torn during installation. What should the repair do?

- A. Fit an arbitrary cover with no compatibility check.
- B. Accept it if the pin moves once.
- C. Restore the approved boot and guide condition.
- D. Apply more grease outside the tear.

23. A refrigerant-component replacement has a prescribed moisture-control and evacuation requirement. What should final preparation follow?

- A. An immediate charge added without the required preparation.
- B. The actual system's specified recovery, assembly and evacuation checks.
- C. Only the line's external cleanliness.
- D. Only a brief compressor run.

24. A traction thermal-system test requires defined battery temperature before interpreting pump response. What should the technician preserve?

- A. The stated temperature and command-test conditions.
- B. Only the reservoir's visible colour.
- C. Only a cold parked observation.
- D. An arbitrary maximum pump command regardless of the procedure.

25. A vehicle sits low at one rear corner. The supplied load condition is correct, the spring seat is displaced, and the opposite corner's spring and tire measurements pass. What is strongest?

- A. A steering-angle sensor as the direct static support.
- B. An unequal tire diameter already not supported.
- C. A common fuel-load difference under a verified load condition.
- D. The displaced spring support at the affected corner.

26. Hydraulic steering noise appears with foaming fluid. The approved suction-leak test fails at a loose inlet connection, while fluid type and pump drive pass. What is strongest?

- A. Air entry at the suction connection.
- B. A failed pump drive despite its verified result.
- C. A wrong fluid type already not supported.
- D. Normal operation because the reservoir has fluid.

27. A stop lamp stays off although its load and output path pass the approved tests. Live data shows the brake request never changes, and the request switch fails its supplied switching test. What is strongest?

- A. A normal input because the pedal moves physically.
- B. A lamp filament defect despite verified load operation.
- C. The brake-request input switch or its immediate path.
- D. A charging regulator as the direct switching cause.

28. A hood-latch repair is complete. What should final verification include?

- A. The primary latch assumed to prove secondary function.
- B. Only a successful remote unlock.
- C. Only its exterior alignment.
- D. The specified primary, secondary and release checks.

29. A misfire remains at cylinder 1 after the coil and plug are exchanged with good cylinders. Injector electrical tests pass, but that cylinder fails the supplied compression minimum. What is stronger than ignition-component substitution as the next area?

- A. The moved plug conclusively despite no fault migration.
- B. Mechanical cylinder sealing and valve operation.
- C. Normal cylinder condition because injector current passes.
- D. The moved coil as the only supported defect.

30. One connector terminal is 70 C during the specified loaded test, while adjacent sound joints are 30 C. The terminal also exceeds its supplied voltage-loss limit. What is strongest?

- A. Normal contact established by the housing's latch.
- B. A resistive connection contributing to local heating.
- C. A fully open circuit carrying no current through the joint.
- D. A remote sensor fault as proof of this terminal's resistance.

31. A repaired harness uses a specified splice sleeve, but its sealing stage is omitted. What remains necessary?

- A. Only wrap the outside with an unapproved cover.
- B. Only accept continuity before sealing.
- C. Leave it open to simplify future testing.
- D. Complete the approved environmental sealing and verification.

32. A powered closure diagnostic requires clearing its travel zone and using a specified command test. What should testing establish?

- A. The approved access controls and observed commanded movement.
- B. Only the switch's exterior fit.
- C. A technician's hand placed in the closing path.
- D. A faster command to cross the pinch area quickly.

33. Fuel pressure exceeds the supplied loaded range, and correction is strongly negative. The controller requests the specified pressure but a regulator test fails; injector leak checks pass. What is strongest?

- A. A low-pressure supply shortage.
- B. An injector leak already excluded by its test.
- C. Pressure regulation producing excessive fuel pressure.
- D. Normal regulation because the request value is correct.

34. A throttle assembly's connector lock is broken during replacement. What must restoration address?

- A. The connector accepted if it rests in place.
- B. Only a temporary communication pass.
- C. The approved connector retention and contact condition.
- D. Only a strip of tape around the harness.

35. An oil-pump repair procedure requires priming before initial startup. What should assembly do?

- A. Complete the prescribed priming and lubrication verification.
- B. Run at high speed until pressure appears.
- C. Accept the pump because its gears turn by hand.
- D. Skip priming if the reservoir contains oil.

36. A replacement interior clip is longer than specified and approaches hidden restraint wiring. What should installation use?

- A. An arbitrary drilled opening for the extra length.
- B. The approved retainer and protected wiring route.
- C. The long clip forced fully into place.
- D. Only the panel's visible flush fit.

37. A battery-management arrangement monitors traction-cell conditions. Which role belongs to that monitoring?

- A. Convert external charging power without a charging power stage.
- B. Replace all physical protection merely because state of charge displays normally.
- C. Perform the traction motor's power conversion by monitoring alone.
- D. Provide defined information used in battery operating limits and control.

38. An alternator repair requires a particular output-terminal insulator. What should final assembly verify?

- A. The specified insulation and secure terminal arrangement.
- B. A bare terminal accepted if the output voltage is normal.
- C. Only the alternator's mounting-bolt torque.
- D. Only the terminal's visible metal finish.

39. A brake lining is wet with fluid from its confirmed wheel-cylinder leak. Hydraulic level has fallen and the vehicle pulls during braking. What is strongest?

- A. Only tire balance as the full explanation.
- B. The leak and affected friction condition both need repair assessment.
- C. A dry lining condition established by its remaining thickness.
- D. Normal braking because the pedal can still move.

40. A hub replacement disturbs an integrated wheel-speed encoder. What should final repair verify?

- A. Ignore the encoder if the wheel turns.
- B. Only smooth hub rotation.
- C. Verify the encoder's specified signal arrangement.
- D. Only matching axle threads.

41. A charge complaint occurs with an active schedule and a displayed waiting status. What should the supplied diagnostic preparation establish?

- A. Only the traction battery's nominal capacity.
- B. Only the cable's outside appearance.
- C. Immediate replacement of the charger before checking the status.
- D. The vehicle's relevant schedule and operating-state conditions.

42. A scope's time base is 1.5 ms per division. One repeating cycle spans four divisions. What signal frequency is represented, rounded to two decimals?

- A. 166.67 Hz
- B. 250.00 Hz
- C. 666.67 Hz
- D. 6.00 Hz

43. A wheel's theoretical drive speed is 400 rpm in the supplied test, but measured speed is 360 rpm. Using theoretical speed as denominator, what percentage shortfall is represented?

- A. 20%
- B. 40%
- C. 10%
- D. 9%

44. A compressed spring assembly will be separated during suspension repair. What should the technician establish first?

- A. A coworker pulling the spring away by hand.
- B. The specified containment and support arrangement.
- C. Only the fastener's final removal torque.
- D. Removal performed quickly before the spring can move.

45. A gateway repair procedure requires preserving existing module identification before replacement. What should preparation include?

- A. Only photographing the case exterior.
- B. A configuration assumed from the gateway's mounting shape.
- C. Only clearing all codes first.
- D. The specified records needed for correct replacement setup.

46. A diesel charge-air connection is repaired after leakage. What should final installation verify?

- A. Correct seating, retention and the specified loaded leak check.
- B. Only the hose's outside diameter.
- C. A tighter clamp used without checking connection position.
- D. Only an idle visual inspection.

47. A seat-belt load limiter operates in its designed restraint event. What is its intended distinction from pretensioning?

- A. Lock the retractor without its load-limiting response.
- B. Remove slack through a pretensioning action.
- C. Provide controlled belt force or payout in its designed event.
- D. Inflate the supplemental airbag cushion.

48. A brake wheel remains dragged after release. Residual pressure is above the supplied limit, and an approved upstream isolation comparison localizes restriction to its flexible hose. What is strongest?

- A. A purely mechanical pad jam as the only supported cause.
- B. Normal released pressure.
- C. A steering rack fault causing the hose test result.
- D. The hose's impaired hydraulic release path.

49. A replacement wiring path is 15 m long with a supplied resistance of 0.002 ohm per metre. Ignoring terminals, what conductor resistance is calculated?

- A. 0.015 ohm
- B. 0.030 ohm
- C. 0.060 ohm
- D. 0.003 ohm

50. The supplied isolated test requires resistance above 1 megohm. A connected section measures 0.1 megohm; after the designated heater branch is disconnected under the approved procedure, the remaining section measures 2 megohms. What is strongest?

- A. Every traction cell is conclusively defective.
- B. The localized heater branch or its connections contain the low-resistance path.
- C. Normal original isolation because a later disconnected section passes.
- D. The remaining section still fails the supplied limit.

51. A torque specification is stated for clean, dry threads, but the technician has lubricated them with an unapproved product. What must be resolved?

- A. The prescribed assembly condition and tightening basis.
- B. A faster wrench pull to reduce lubrication effects.
- C. Only matching the written torque number.
- D. A higher torque to compensate for added lubricant.

52. A conventional valve spring contributes to which engine function?

- A. Seal combustion pressure at the valve seat without the valve itself.
- B. Control the guide's manufactured clearance around the stem.
- C. Return the valve through its designed closing movement.
- D. Set the rocker mechanism's geometric leverage ratio.

53. A driveline repair removes a heat shield protecting an adjacent seal and harness. What should restoration include?

- A. Only the repaired component's fasteners.
- B. Only a cold leak check.
- C. Omit the shield because it transmits no torque.
- D. The specified shield and surrounding routing arrangement.

54. An automatic transmission's hydraulic apply circuit establishes what intended function for its selected friction element?

- A. Measure shaft rotation instead of applying a friction element.
- B. Provide only a reservoir vent without an apply-pressure path.
- C. Release that same element in every commanded gear state.
- D. Apply the element needed by the commanded gear state.

55. A charging test requests 80 kW. Measured delivered voltage is 400 V and current is 180 A under the stated steady model. What delivered power should be compared with the request?

- A. 720 kW
- B. 72 kW
- C. 7.2 kW
- D. 80 kW

56. A battery-rated test model delivers 18 A for 40 minutes steadily. What discharged capacity is represented for comparison with the supplied capacity criterion?

- A. 12 Ah
- B. 18 Ah
- C. 7.2 Ah
- D. 27 Ah

57. An HVAC door command changes, but feedback remains fixed. Approved inspection confirms the actuator and linkage move freely when disconnected, while its motor drive output remains absent under command. What is strongest?

- A. A normal commanded movement despite fixed feedback.
- B. A cabin filter obstruction as the motor-output cause.
- C. The actuator's electrical drive or control path.
- D. A mechanically seized door already not supported.

58. A driveline boot is replaced after grease loss. What should repair assessment include?

- A. The joint's condition and the complete specified lubrication restoration.
- B. Only the new boot's appearance.
- C. Only filling beyond the specified amount.
- D. The joint ignored because the replacement boot seals.

59. A body-module repair changes an accessory's programmed configuration. What should final documentation and testing establish?

- A. A setting copied from an unrelated trim level.
- B. Only code clearing.
- C. Only that the module powers up.
- D. The authorized configuration and affected accessory functions.

60. A fuse in an automotive circuit supplies which principal protective function?

- A. Regulate normal charging voltage continuously.
- B. Interrupt its designed current path under the applicable overcurrent condition.
- C. Measure the battery's state of charge directly.
- D. Boost load voltage as an active power converter.

61. A steering-linkage repair requires verifying centre position before final alignment. What should installation use?

- A. Toe adjusted to hide an incorrectly centred linkage.
- B. Only the steering wheel's external appearance.
- C. The specified centring and geometry sequence.
- D. An arbitrary lever position chosen for bolt access.

62. A shaft turns at 1,200 rpm and drives a wheel through the stated 4:1 reduction. What wheel speed follows for the ratio comparison, ignoring slip?

- A. 600 rpm
- B. 4,800 rpm
- C. 300 rpm
- D. 150 rpm

63. A gasoline engine runs inside a workshop. Which hazard requires effective exhaust extraction even when no smoke is visible?

- A. Only contact with a moving fan belt.
- B. Exposure to combustion gases such as carbon monoxide.
- C. A guarantee that clear exhaust contains no harmful gas.
- D. Only the weight carried by the lift.

64. A replacement HVAC duct is installed behind an interior panel. What should final assembly verify?

- A. Only that the blower motor rotates.
- B. Only the panel's exterior appearance.
- C. A partly collapsed duct accepted if some air exits.
- D. The specified sealing, attachment and unobstructed air path.

65. A network repair restored static communication after a complaint during engine movement. What should verification reproduce?

- A. The relevant operating movement using the approved safe test.
- B. Only splice appearance.
- C. The original complaint declared resolved without testing its condition.
- D. Only a stopped-engine scan.

66. A battery warning appears after an accessory-belt failure. The alternator shaft no longer turns, electrical connections pass, and output is absent. What is most directly supported?

- A. A normal generating state because the wiring is intact.
- B. A disconnected output cable despite its passing check.
- C. Loss of the alternator's mechanical drive.
- D. An isolated lamp-circuit fault explaining the stationary shaft.

67. A hybrid repair requires a specific re-energization sequence after isolation. What should the technician use?

- A. An arbitrary reverse of the removal sequence.
- B. The prescribed accounting, connection and verification steps.
- C. A bypass of any interlock that delays readiness.
- D. Only an accessory power check.

68. A brake rotor's measured maximum thickness is 26.12 mm and minimum is 26.06 mm. What variation should be compared with the supplied limit?

- A. 0.12 mm
- B. 0.03 mm
- C. 0.02 mm
- D. 0.06 mm

69. A network harness is moved during engine repair. What should final restoration verify?

- A. The harness left unsupported because all connectors are latched.
- B. Only parked communication.
- C. Only the total harness length.
- D. The designated routing, fastening and protection from moving or hot parts.

70. A replacement high-voltage cover is not seated over its prescribed barrier interface. What must be resolved before restoration?

- A. The approved cover, barrier and complete connection state.
- B. Only a ready-state display.
- C. Only the fastener count.
- D. The cover left partly open because the component still operates.

71. A source module's expected signal is present on its bus, but one receiving module loses power when its fuse-terminal voltage drops under load. Other recipients continue receiving the message. What is strongest?

- A. A normal recipient supply because its fuse looks intact.
- B. A complete absence of the source message.
- C. The affected recipient's local supply connection.
- D. Every bus node's software as a shared failure.

72. A wheel shows apparent play, but the prescribed isolated hub check passes and the ball joint exceeds its movement limit. What is strongest?

- A. The failed ball-joint condition.
- B. A hub-bearing defect proved by the general wheel movement alone.
- C. Normal suspension because the hub passes.
- D. A wheel-balance error explaining excessive joint movement.

73. A wheel-speed test gives 600 revolutions over 1,260 m. What effective rolling circumference is represented?

- A. 1.50 m
- B. 2.10 m
- C. 2.50 m
- D. 0.476 m

74. A hood's primary latch holds, but the supplied secondary-catch test fails. Inspection finds the secondary catch stuck away from its intended engagement while striker alignment passes. What is strongest?

- A. A striker-position defect despite its passing test.
- B. A body-controller command as the mechanical catch's sole cause.
- C. A normal complete hood latch system because the primary holds.
- D. The defective secondary-catch mechanism.

75. A charging complaint occurs only with a heavy electrical load. The alternator output meets its supplied condition, but the positive connection's drop rises above limit while the ground passes. What is strongest?

- A. The loaded positive charging connection.
- B. A missing alternator output already excluded.
- C. Normal charging because the unloaded test passes.
- D. The passing ground as the only fault.

76. A differential contact-pattern test is acceptable, but an approved bearing inspection finds excessive roughness and the axle growls during its supplied load check. What is strongest?

- A. A normal axle because contact passes.
- B. The bearing condition rather than failed gear contact alone.
- C. A gear-pattern defect despite its acceptable result.
- D. A starter mounting fault causing axle roughness.

77. On a shared vehicle communication network, an addressed message allows the relevant modules to interpret what?

- A. The actual termination resistance without a separate electrical test.
- B. A guaranteed normal electrical bus voltage regardless of wiring condition.
- C. The information identified by the defined message and protocol.
- D. A guaranteed repair instruction for every stored code.

78. A rattle begins after trim work. Controlled vibration reproduces it at a loose clip; the panel's wiring and accessory functions pass. Refitting the approved clip removes the noise. What is supported?

- A. An accessory electrical fault despite passing checks.
- B. The loose trim retention contributed to the complaint.
- C. A normal original clip merely because the panel looked aligned.
- D. A windshield bond fault as the confirmed source.

79. The supplied evaporator diagnostic check expects adequate airflow. Its filter and fan pass, but the housing inspection reveals a collapsed duct blocking the outlet. Cooling surfaces are cold and delivered air volume is low. What is strongest?

- A. A blower command failure despite its passing check.
- B. Normal air delivery because the evaporator is cold.
- C. A complete refrigerant-cooling absence.
- D. The obstructed outlet duct contributes to poor delivered airflow.

80. A diesel command requires EGR closure under the stated test. Position feedback still shows open, and inspection confirms the valve jammed at that position while command and supply pass. What is strongest?

- A. Mechanical sticking of the EGR valve.
- B. A missing closure request already excluded.
- C. A normal closed EGR position.
- D. An exhaust-temperature sensor alone causing the confirmed jam.

81. A connector's locking tang is damaged while replacing a terminal. What should final assembly provide?

- A. An oversized pin used to hold the terminal by friction.
- B. Only a parked continuity reading.
- C. Approved terminal retention and verified electrical contact.
- D. Only the connector's ability to close once.

82. A tire pull changes direction after an approved front-tire exchange. Alignment and brake-release checks pass under the supplied conditions. What is strongest?

- A. A brake drag already supported despite its passing result.
- B. A fixed chassis fault conclusively unchanged by the exchange.
- C. A tire-related contribution that follows the exchanged assembly.
- D. Normal tires because their inflation is equal.

83. An EV repair replaces a coolant joint near high-voltage equipment. What should final restoration include?

- A. Only external wiping.
- B. A general pressure test exceeding the battery-circuit specification.
- C. Only the coolant reservoir's mark.
- D. The specified joint, fluid, leak checks and protected equipment condition.

84. A wheel attachment specifies a particular fastener seat profile. What should replacement use?

- A. The matching specified seat, thread and tightening arrangement.
- B. An arbitrary washer to adapt a different seat.
- C. Any fastener with the same hex size.
- D. The replacement accepted if it starts by hand.

85. A service micrometer is used to measure an engine journal. Which quantity does its normal outside measuring arrangement determine?

- A. The journal's rotational speed under load.
- B. The dimension between its opposing contact faces.
- C. The bearing's electrical insulation condition.
- D. The oil's chemical viscosity grade directly.

86. An engine starts normally cold but runs rich after warm-up. The supplied test shows coolant temperature at 90 C while scan data remains at -20 C; reference and ground pass, and the signal circuit is open. What is strongest?

- A. The coolant-temperature signal path provides a false cold indication.
- B. An intake leak conclusively explaining rich correction.
- C. A correct temperature report matching the measured coolant.
- D. A fuel filter restriction as the direct cause of signal discontinuity.

87. A module transmits the expected identifier, but its data value is inconsistent with a verified physical input. Other recipients display the same incorrect value, and their network paths pass. What is strongest?

- A. A missing message everywhere despite verified reception.
- B. A correct source merely because its identifier is present.
- C. The source's input interpretation or transmitted data.
- D. Independent wiring faults at every recipient as the only cause.

88. A captured communication interval carries 100 bits in 0.0002 seconds under the supplied measurement model. What average bit rate is represented?

- A. 1,000,000 bits/s
- B. 500,000 bits/s
- C. 50,000 bits/s
- D. 200,000 bits/s

89. A windshield repair procedure requires an adhesive-system curing condition before vehicle use. What should the repair follow?

- A. Immediate use if no water enters during a brief test.
- B. A universal short wait copied from another product.
- C. Only the glass's exterior appearance.
- D. The actual adhesive's prescribed cure and release requirements.

90. A clutch component's orientation differs between its two sides. What must installation verify?

- A. Only the component's unused condition.
- B. Whichever side leaves more visible clearance.
- C. Only the bolt pattern's ability to fit.
- D. The specified orientation for the actual assembly.

91. A diagnostic connector adapter has a damaged contact that spreads a vehicle terminal during insertion. What should happen?

- A. Use extra force until all pins connect.
- B. Accept the damage if the scan tool powers up.
- C. Remove the defective adapter and assess the affected connector.
- D. Insert it repeatedly to reshape the vehicle contact.

92. A fuse holder is heat-damaged after a loose-contact fault. What should the repair restore?

- A. The specified contact, holder and circuit protection condition.
- B. Only a new fuse in the damaged holder.
- C. Only exterior cleaning of the housing.
- D. A higher fuse rating to avoid another opening.

93. A bearing replacement has a specified seated position and retention method. What should final assembly verify?

- A. A deeper press position used without checking the stop.
- B. Both seating and the required retention state.
- C. Only that the bearing turned freely before installation.
- D. Only the press's maximum capacity.

94. A suspension bushing procedure specifies tightening at a defined loaded position. What should the technician establish?

- A. That position before final tightening and verification.
- B. Only a matching bolt-head size.
- C. The fully hanging position for convenience.
- D. Additional torque to replace the position requirement.

95. A lifting procedure requires mechanical locks to be engaged before underbody access. The vehicle is raised but the locks remain disengaged. What should happen?

- A. Begin access if the lift's hydraulic pressure appears steady.
- B. Complete the specified support state before going underneath.
- C. Use the lift's stop button as the only support control.
- D. Treat correct lifting-point placement as a substitute for locks.

96. A tool's acceptable reference range is 99.8–100.2 mm. Repeated reference readings are 100.6 mm; the production part appears within tolerance only on that tool. What is best supported?

- A. Repeated identical readings prove the tool is accurate.
- B. The reference range can be ignored for an experienced operator.
- C. The part must pass because its displayed dimension is acceptable.
- D. The reference failure must be resolved before accepting the part measurement.

97. A timing component replacement requires alignment and a prescribed manual rotation check before startup. What should be completed?

- A. Only a brief powered start to check noise.
- B. An assumed alignment based on the removed component's position.
- C. The specified timing setup and interference verification.
- D. Only the new component's part number.

98. A tire-pressure sensor replacement requires a specific service kit and relearn. What should assembly include?

- A. A sensor from another wheel accepted without the required setup.
- B. The designated sealing parts and prescribed identification setup.
- C. Only its outside dimensions.
- D. Only a pressure reading before inflation.

99. A diesel injector replacement requires a specified calibration-code entry. What must final repair include?

- A. Only erasing the old fault code.
- B. A code copied from another injector without checking identity.
- C. The correct component identification and prescribed setup verification.
- D. Only the injector's mounting fit.

100. After windshield replacement, the camera has no current code but its bracket angle fails the supplied physical reference. The calibration instructions require correct mounting before setup. What is strongest?

- A. Correct the mounting discrepancy before accepting calibration.
- B. A tire-pressure change as the direct bracket correction.
- C. Calibration alone as an authorized repair for the failed mounting reference.
- D. A code-free scan proving the bracket is correct.

101. A repaired cylinder-head surface meets flatness but falls outside the supplied minimum thickness. What should disposition follow?

- A. Acceptance based only on the flatness pass.
- B. A thicker gasket selected without authorization.
- C. Additional head-bolt torque to replace missing material.
- D. The complete component machining and replacement criteria.

102. A communication dropout occurs when a harness touches an engine bracket. Power and grounds stay stable, and the conductor waveform collapses at the chafed contact only during the touch. What is strongest?

- A. An engine mechanical misfire as proof of wire continuity.
- B. A shared supply collapse despite stable measurements.
- C. A local communication conductor fault at the chafed area.
- D. A normal signal unaffected by harness position.

103. A hub rotates smoothly unloaded, but produces the complaint noise during its specified loaded check. Tire substitution does not change the noise, and driveline joints pass. What is strongest?

- A. A load-dependent hub-bearing condition.
- B. A tire-only fault despite the unchanged substitution result.
- C. A failed driveline joint despite its passing check.
- D. Normal bearing function established by unloaded rotation alone.

104. A manual clutch release fork travels its specified distance, but inspection finds the disc binds on damaged shaft splines. The clutch drags when fully depressed. What is strongest?

- A. Insufficient fork travel despite its verified result.
- B. Disc movement restricted by the damaged splines.
- C. A tire pressure difference causing clutch drag.
- D. Normal disengagement because the pedal is down.

105. A cylinder head's coolant-side pressure test leaks visibly at a confirmed crack while its gasket-face flatness meets the provided limit. What area is directly supported?

- A. A crankshaft oil seal explaining the head-test leakage.
- B. A normal head because the gasket face passes.
- C. The passing face flatness as the only failed condition.
- D. The cracked head casting.

106. A tie-rod assembly connects the steering output to its designated wheel linkage. What does its adjustment principally change in the specified geometry?

- A. The suspension's camber setting as its primary function.
- B. The wheel's toe relationship.
- C. The wheel offset manufactured into the rim.
- D. The steering-axis caster angle as its primary function.

107. An HVAC control repair requires initialization after reconnecting its power supply. What should final repair include?

- A. A setting copied from a different vehicle configuration.
- B. Only powering the display.
- C. The prescribed setup and verification of affected functions.
- D. Only erasing a stored message.

108. Both locks in one door fail. Their commands reach the door module; power is correct, but a shared ground connection exceeds the supplied loaded-loss limit. Other doors pass. What is strongest?

- A. A complete absence of lock commands.
- B. A common vehicle-wide supply collapse despite the other results.
- C. Every actuator failing independently as the only explanation.
- D. The affected door's shared ground path.

109. A driveline seal operates against a specified rotating surface. What is its principal intended purpose?

- A. Retain the designated fluid across that sealing interface.
- B. Change the lubricant's specified viscosity chemically.
- C. Set the bearing's mechanical preload adjustment.
- D. Issue electronic shift commands to the controller.

110. A technician finds fuel dripping beside a portable heater during vehicle inspection. What is appropriate?

- A. Stop the affected activity and control the leak and ignition exposure.
- B. Move the heater slightly and continue without assessing vapours.
- C. Increase heater output to dry the spill faster.
- D. Place absorbent material down as the only control.

111. An evaporative hose replacement creates a kink in the prescribed vapour route. What should final installation verify?

- A. The kink accepted because no liquid leaks.
- B. Only its clamp torque.
- C. Only the hose's material marking.
- D. Correct routing and the intended unobstructed path.

112. A scanner communicates with an engine module directly but not through the vehicle gateway. The gateway input-side scan connection is good; its supply remains below the provided operating minimum. What is strongest?

- A. Program the gateway without addressing its failed power condition.
- B. Resolve the gateway's deficient supply before judging routing.
- C. Replace the engine module despite direct communication.
- D. Assume direct communication proves every gateway path works.

113. An A/C fitting's specified torque is given for a particular assembly condition. What should repair use?

- A. Only wrench resistance judged by feel.
- B. Additional torque to compensate for any seal uncertainty.
- C. The instructed seal preparation and tightening method.
- D. A different seal material selected for easier assembly.

114. A diesel loses power under load. The supplied fuel filter differential test is excessive, rail pressure falls below its stated target, and replacing the blocked element restores both pressure and power. What is supported?

- A. A turbo fault conclusively despite unchanged boost checks.
- B. Normal original filtration despite its failed differential test.
- C. A missing accelerator request despite its verified signal.
- D. The filter restriction contributed to the loaded delivery fault.

115. A brake-bracket tightening model applies 150 N perpendicular to a 0.40 m wrench lever. What torque is represented?

- A. 60 N m
- B. 375 N m
- C. 120 N m
- D. 30 N m

116. A load receives 10.4 V from a measured 12.8 V source, with the same verified reference. What difference is represented across the supplied feed comparison?

- A. 23.2 V
- B. 12.8 V
- C. 2.4 V
- D. 10.4 V

117. A refrigerant metering device performs which principal role in its specified cycle?

- A. Reject heat as the condenser's main surface.
- B. Meter refrigerant into the evaporator's low-side path.
- C. Retain liquid in a refrigerant receiver.
- D. Raise pressure to compressor discharge level.

118. A brake friction replacement uses pads specified for one caliper configuration, but the installed caliper is different. What must be resolved?

- A. Only its unused condition.
- B. The pad ground down to fit without approval.
- C. Only the pad's overall length.
- D. The approved friction-component and caliper compatibility.

119. A repaired brake hose clears the tire at centre steering but contacts it at full lock. What should be corrected?

- A. Only additional clamp tightness.
- B. A restricted steering range imposed to conceal contact.
- C. The approved routing over the required movement range.
- D. Only straight-ahead clearance.

120. A gasoline fuel hose is replaced with one lacking documented compatibility with the specified blend. What should be used?

- A. Exterior insulation as proof of internal fuel suitability.
- B. An approved hose for the actual fuel and service conditions.
- C. A shorter hose to compensate for unknown compatibility.
- D. The unverified hose if its end connections fit.

121. A brake pedal pulsates at ordinary low-speed stops. Scan data records one wheel suddenly reading zero while the vehicle still moves; the supplied sensor-gap check fails at that wheel. What is strongest?

- A. An erroneous wheel-speed input contributing to unintended intervention.
- B. Correct wheel-speed information from every sensor.
- C. Normal rotor variation as the only supported cause.
- D. A parking-brake motor fault as proof of the gap finding.

122. A transmission output sensor reports zero, but a verified scope records its expected waveform at the module connector. The supplied scan-data test confirms other inputs respond normally. What is the focused next area?

- A. A complete absence of the local sensor waveform.
- B. An open harness despite signal at the module.
- C. The module's interpretation or configuration for that input.
- D. A wheel bearing as the electrical decoding path.

123. A low-compression cylinder improves substantially during the prescribed wet test. Leak-down flow is strongest in the crankcase; intake and exhaust flows are minor, with timing verified. What is strongest?

- A. Normal cylinder sealing because the wet reading improved.
- B. An intake valve as the only supported leak path.
- C. An exhaust valve as the dominant path despite the findings.
- D. A piston-and-cylinder sealing lead.

124. A supplied bearing-clearance model uses housing diameter minus journal diameter. The measured values are 60.02 mm and 59.96 mm. What diametral clearance follows?

- A. 0.06 mm
- B. 0.03 mm
- C. 0.02 mm
- D. 0.12 mm

125. A wheel-bearing diagnostic distinguishes loaded noise from unloaded hand rotation. What should testing preserve?

- A. Only the tire's nominal width.
- B. The specified conditions for each bearing check.
- C. Only the easiest unloaded test.
- D. A universal decision based on any audible sound.

Practice Exam 20: Answer Key and Explanations

1. A — The measured mount movement fails its criterion under the relevant torque change, while competing driveline checks pass. Investigate the mount and attachment relationship. Fastener presence cannot establish correct support stiffness or condition, and an acceptable spline result does not explain the observed excessive mount travel.

- 2. C** — The glow plug supplies heat within the engine's specified starting or related control strategy. Cranking torque, fuel filtration and charge-air compression are different diesel-support functions. Assess its actual supply and heating condition against the vehicle procedure rather than assuming a fitted plug necessarily works.
- 3. D** — The physical control position and transmission linkage are not aligned under the specified check. The signal follows that mispositioned mechanism, supporting an adjustment or linkage lead rather than an isolated display issue. Restore and verify the intended selection relationship before attributing it to internal friction wear.
- 4. A** — The load can operate through the approved comparison path, while its normal switched feed fails the loaded contact test. Investigate that relay path and connection. A coil command establishes control input but cannot prove the separate contacts deliver the voltage needed by the heating load.
- 5. B** — The throttle plate changes the main intake opening under the engine's control strategy. Fuel-injector metering and EGR admission occur at separate devices, while cylinder displacement is fixed geometry. Plate position still must be interpreted with actual airflow and operating conditions; a command does not prove that the required air mass enters.
- 6. B** — The calibration must be performed with the assembly in its required mechanical state. Restore the mount and complete the specified setup and checks. A cleared warning or apparently level bracket does not establish correct reference, and software cannot compensate automatically for physical damage outside the accepted installation.
- 7. A** — Stroke is the distance the piston travels between top and bottom dead centre. Bore diameter, crank radius and valve lift are other engine dimensions with different definitions. Correct identification matters when checking parts or calculating swept volume, rather than using any convenient engine length as the stroke.
- 8. C** — The complaint follows road speed rather than the different engine-speed relationship in each gear, and the shaft bearing has a failed condition check. That supports the bearing as a focused lead. Movement alone does not establish acceptable support, and the controlled comparisons weaken an engine-rpm-only source.
- 9. D** — The specified terminal and conductor properties form part of the approved electrical connection. Cavity fit alone does not establish material or wire suitability. Colour is identification information rather than a complete specification, and forcing a larger terminal can damage the housing or intended contact relationship.
- 10. A** — The pan joint needs the prescribed surfaces, gasket and loading method. Extra material or force cannot automatically correct distortion or establish the intended sealing relationship. Complete the full sequence and required final checks rather than treating one fastener reading as evidence for the whole joint.
- 11. C** — The selector must achieve and indicate its required operating states after assembly. Free handle movement does not prove that the transmission reaches each intended position. Follow the final checks

rather than assuming a previous adjustment remains valid after work that changed the installed relationship.

12. D — Convert forty-five minutes to 0.75 hours and multiply by the stated two-kilowatt input to obtain 1.5 kWh. This expresses the supplied steady model's accumulated energy. The arithmetic does not authorize operating or measuring a high-voltage heater outside the approved vehicle diagnostic procedure and safe-work boundary.

13. B — Transmission shows a communication function, but the content and configuration fail the supplied vehicle comparison. Resolve the actual setup under the authorized procedure. Working wiring cannot correct a module programmed for different equipment, and the mismatch does not automatically authorize adding hardware the vehicle was not specified to have.

14. A — Use the flow-weighted temperatures: two times twenty plus one times eighty, divided by three, gives forty degrees Celsius. The equal heat-capacity assumption is explicitly supplied. A simple midpoint would assume equal flow quantities, which is not the stated mixture used for the outlet comparison.

15. D — The physical arm damage provides a plausible cause of the failed alignment geometry after the impact. Passing ride-height and tire checks narrow other explanations. Electronic calibration cannot straighten a mechanical part, and fastener presence does not establish that a bent locating component preserves the required wheel position.

16. C — Divide the measured twelve volts by four amperes to obtain three ohms equivalent resistance under the stated model. Both values describe the same test condition. The result is not a winding inspection verdict by itself; compare it with the applicable operating basis rather than a resistance measured under another state.

17. B — The command changes without the corresponding measured ratio and with low pressure in the relevant apply circuit. Investigate that hydraulic or control path. A requested state is not proof of the actual mechanical result, and unrelated engine temperature regulation cannot explain the supplied localized pressure finding.

18. C — The new route needs protection at the body edge to preserve conductor and insulation condition in service. Correct the support and specified barrier before final verification. A functioning lamp and wire identification do not establish that later movement cannot abrade the exposed harness.

19. D — The continuity evidence identifies a common physical interruption between the test point and both terminations, consistent with an open reading. Investigate that connection under the network instructions. Added parallel resistance would not produce this result, and routing software does not restore a broken conductor path.

20. B — The regulator controls the required fuel-pressure relationship in its system. Injector commands, particulate filtering and tank-vapour handling are different fuel-support functions. Its presence alone cannot establish normal operation; compare actual pressure and the specified response to the relevant supply, return and controller conditions.

- 21. A** — The sensor's component response passes, but the circuit has a confirmed short matching the supplied erroneous report behaviour. Restore and verify that signal path. The displayed temperature is not proof of the actual cabin condition, and an unrelated compressor defect cannot account for the identified electrical connection fault.
- 22. C** — The damaged boot no longer provides its prescribed protection, even if the pin initially moves. Restore the guide assembly under the component requirements. Exterior grease and an unverified cover cannot establish sealing and compatibility, so verify the actual installed condition before returning the brake to service.
- 23. B** — The repair must restore the required internal condition before operation, not merely connect clean-looking external parts. Complete the system's preparation and checks. A short run cannot substitute for evacuation, and charging immediately can leave the post-repair moisture or air condition unresolved.
- 24. A** — The test conditions define the meaning of the commanded and measured response. Establish them before accepting the result. An uncontrolled maximum command or one cold observation can describe a different operating state, while fluid appearance cannot establish whether the diagnostic prerequisites have been met.
- 25. D** — The displaced spring seat changes the affected corner's support arrangement under the supplied controlled load. Investigate and restore that mechanical condition. The passing opposite-side and tire checks help distinguish alternative height causes but cannot make an incorrectly seated spring acceptable.
- 26. A** — The foaming complaint accompanies a failed suction-side leak check at a loose connection, supporting air entry there. A reservoir containing fluid does not establish an air-free supply. Repair and verify that path before condemning a pump drive or fluid specification that the supplied checks do not show as defective.
- 27. C** — The load can operate, but the control never receives the changing brake request and the switch fails its defined test. Investigate that input path. Pedal movement is not proof of electrical switch response, and replacing a load that already passes would not restore the missing command information.
- 28. D** — The closure's separate retention and release functions need the checks required by the vehicle procedure. A primary pass does not establish a working secondary catch. Exterior fit and an unlock command also cannot demonstrate every mechanical latch condition, so verify the complete repaired arrangement before release.
- 29. B** — The fault does not follow the exchanged ignition parts, while the cylinder's mechanical test fails. Investigate sealing and valve operation using the engine procedure. A normal injector electrical result addresses one alternative but cannot make the failed compression condition acceptable or prove the cylinder's mechanical state is sound.
- 30. B** — The localized temperature difference accompanies an independently failed loaded voltage-loss measurement, supporting a resistive joint. Correct housing retention does not prove low-resistance

contact. Assess and repair the connection under the circuit method rather than diagnosing from temperature alone or ignoring the measured electrical loss.

31. D — The splice procedure includes environmental restoration as well as electrical connection. Complete that stage and verify the installed condition. Present continuity does not prove protection from later moisture or contamination, while a convenient open joint does not provide the prescribed service arrangement.

32. A — The closure can create movement and pinch exposure during the command test. Establish the prescribed access controls and observe it from a suitable position. Faster travel and switch appearance do not control the physical hazard or demonstrate that the mechanism follows its required operation.

33. C — The actual pressure is excessive despite a correct request, with a failed regulator test and no supported injector leak. Investigate the regulation path. Negative correction is consistent with the controller removing fuel, but the pressure evidence and targeted test provide the stronger localization than fuel correction alone.

34. C — The lock provides the specified retention needed to maintain the connection in service. Restore it through the approved connector repair method and verify contact. A parked pass cannot establish that an unsecured interface remains connected through vibration or movement, and improvised tape does not automatically provide the required engagement.

35. A — The procedure's priming step establishes the pump's initial operating preparation and must be completed before startup. A filled reservoir and hand rotation do not independently prove that its oil path is ready. Faster operation cannot replace the prescribed preparation or verify the lubrication condition beforehand.

36. B — The panel needs the correct retention component without creating an unintended contact with hidden wiring. Use the approved clip and route. A flush exterior can conceal interference, while unreviewed drilling changes the underlying installation instead of establishing the specified repair condition.

37. D — Battery monitoring provides information used in its operating limits and control. It does not itself perform every motor-drive or charging conversion, and a state-of-charge display is not proof of complete safety. Assess the actual vehicle's values and requirements without replacing physical barriers or assuming one reported quantity certifies every cell.

38. A — The output connection needs its prescribed insulation and mechanical assembly independently of measured generating voltage. Restore those parts before release. A functioning alternator can still have an unacceptable exposed or unsupported connection, so output performance does not waive the terminal protection requirement.

39. B — The confirmed leak explains fluid loss and contaminates the friction interface, both relevant to the braking complaint. Remaining lining thickness does not establish suitable friction condition. Assess the complete affected brake under the repair criteria rather than treating a single dimensional pass or available pedal movement as full system acceptance.

- 40. C** — The encoder has a control-system function separate from the bearing's mechanical rotation. Verify its actual installation and signal using the component procedure. Smooth movement and thread fit cannot establish that the directional or sensing relationship needed by the wheel-speed system has been restored.
- 41. D** — The vehicle state and schedule can affect whether the expected session should begin under its design. Confirm them and follow the diagnostic sequence before selecting a component. Cable appearance and nominal capacity cannot establish that the current charging command is permitted or that the waiting status indicates a hardware fault.
- 42. A** — The cycle lasts four times 1.5 ms, or six milliseconds. Convert to 0.006 seconds and take its reciprocal to obtain approximately 166.67 Hz. The scope's division count describes time, so treating six milliseconds as six hertz would confuse period with frequency.
- 43. C** — The shortfall is forty rpm. Divide that by the supplied four-hundred-rpm theoretical speed and multiply by one hundred to obtain ten percent. This quantifies the comparison only; diagnosing its cause requires the actual test's measurement validity and torque-transfer evidence rather than assuming a specific slipping component from the percentage.
- 44. B** — The spring contains stored mechanical energy that must remain controlled through the repair's specified containment method. Set up suitable equipment and support before separation. Fastener torque does not describe spring restraint, and speed or manual pulling cannot establish the approved stable load path.
- 45. D** — The identification and configuration records support setup of the actual vehicle after replacement. Preserve them as directed. External case appearance cannot describe every installed network option, and indiscriminate code clearing can remove useful information before the required repair data is captured.
- 46. A** — The joint must retain and seal correctly under the stated charge-air duty. An idle-only observation can miss the condition where the original leak occurred. Follow the seating and clamp requirements, then use the relevant test rather than treating extra tightening as a substitute for proper assembly.
- 47. C** — Load limiting manages the belt's designed force or payout behaviour. Pretensioning, retractor locking and airbag cushioning are related protective actions but not the same function. Identify the actual restraint arrangement and its service requirements rather than assuming every occupant-protection component uses an identical mechanism.
- 48. D** — The residual pressure fails its criterion, and the prescribed comparison localizes the release restriction to the hose. That is stronger evidence than drag alone. Restore the hose through the approved brake method and verify release; this conclusion relies on the given isolation result rather than assuming every dragging wheel has the same cause.
- 49. B** — Multiply the fifteen-metre conductor length by the supplied 0.002 ohm per metre to obtain 0.030 ohm. Terminals are excluded, so their additional resistance is not included. This calculates the

stated replacement path rather than establishing a universal acceptance limit for every automotive wire or operating current.

50. B — The resistance fails with the heater branch included but passes after its controlled removal. That localizes investigation to the removed branch and its connections, not automatically to the complete battery. The conclusion depends on the stated authorized test boundary and does not license unapproved energized isolation measurements.

51. A — Thread condition influences the torque-to-load relationship, so resolve the departure from the specified dry assembly method. A matching number does not establish the same joint loading under a different friction basis. Arbitrary torque increases and pulling speed cannot supply the missing approved condition.

52. C — The valve spring supplies the designed closing force within the valve-train arrangement. Valve-seat sealing and guide clearance depend on their actual mating components, while leverage ratio belongs to the mechanism's geometry. Correct spring selection and condition do not independently establish valve timing or acceptable sealing at every interface.

53. D — The shield protects nearby parts from their service environment even though it does not transmit driveline torque. Restore it and verify routing as specified. A cold check cannot establish suitable heat exposure after the omitted protection, and mechanical repair completion does not authorize leaving affected safeguards out.

54. D — The hydraulic apply circuit supplies the designed pressure path for engaging the friction element needed by the gear state. Release, reservoir venting and speed measurement are separate functions. A correct command still does not establish that the circuit reaches its pressure requirement or that the element transfers torque under load.

55. B — Multiply four hundred volts by one hundred eighty amperes to obtain 72,000 W, or seventy-two kilowatts. This is below the stated eighty-kilowatt request. The calculation establishes a comparison, not its cause; charging limits, measurements and operating conditions still need interpretation through the prescribed diagnostic procedure.

56. A — Convert forty minutes to two-thirds of an hour and multiply by eighteen amperes to obtain twelve ampere-hours. The current and duration describe the same steady test. This calculates removed charge under the supplied model; it does not by itself determine state of health without the applicable acceptance conditions.

57. C — The mechanical components move freely under the approved check, but the required electrical drive is missing during command. Investigate that output path before replacing a door merely because feedback stays fixed. A restricted filter affects airflow but cannot establish why the captured actuator drive is absent.

58. A — A new boot restores protection only if the joint and lubrication condition are also acceptable. Assess the grease-loss exposure and restore the designated lubricant and assembly. Overfilling is not automatically corrective, and exterior sealing cannot prove that an exposed joint has no damage.

- 59. D** — The final setup must match the actual vehicle and the approved repair scope. Verify affected functions and preserve the configuration record. A powered module and cleared codes do not establish that options from another trim level correspond to the installed hardware or intended operating arrangement.
- 60. B** — The fuse provides overcurrent protection under its specified characteristics and application. Voltage regulation and state-of-charge measurement are different functions. Its rating must match the actual circuit requirements; the presence of an intact fuse does not independently prove that every downstream connection and load operates correctly.
- 61. C** — The alignment must begin from the linkage relationship required by the vehicle's procedure. A centred-looking wheel does not prove the mechanism is correctly set. Adjusting another measurement to hide a wrong centre changes the final geometry rather than establishing the approved installation state.
- 62. C** — Divide the twelve-hundred-rpm shaft speed by the supplied four-to-one reduction to obtain three hundred rpm at the wheel. The stated model excludes slip. Multiplying would apply the reduction relationship in the opposite direction and overstate the output speed instead of reducing it.
- 63. B** — Harmful combustion gases can be present without visible smoke. Use the workshop's approved exhaust-extraction and ventilation controls when running the engine. Mechanical guarding and vehicle support address other hazards but do not remove inhalation exposure from exhaust released into the work area.
- 64. D** — The duct must carry air through its approved geometry and seals after the panel closes. Blower operation alone does not establish delivery, and partial airflow cannot waive an identified collapse. Verify the actual installed route rather than accepting only the visible panel fit.
- 65. A** — The original fault depended on movement, so verify the repaired path under the relevant approved condition. A static pass can miss an intermittent interruption that remains when the engine or harness moves. The final evidence should address that complaint without placing personnel in an unsafe moving-parts exposure.
- 66. C** — The failed belt removes the stated mechanical input needed by the alternator, matching its stationary shaft and absent output. Sound electrical connections cannot replace that drive. Address the drive fault and verify charging before attributing the entire complaint to the warning-lamp circuit alone.
- 67. B** — Restoration must follow the actual procedure, including required checks of tools, personnel, covers and connections. An assumed reverse order may omit steps unique to re-energization. Accessory operation cannot establish the complete high-voltage state, and bypassing an interlock does not demonstrate that the repaired system is correctly restored.
- 68. D** — Subtract the minimum 26.06 mm from the maximum 26.12 mm to obtain 0.06 mm thickness variation. This range differs from average thickness and minimum service thickness. Compare the calculated variation with its own supplied criterion rather than accepting it solely because either reading meets another rotor requirement.

- 69. D** — Communication while parked does not establish that the harness remains protected in service. Restore the prescribed supports and route, then verify relevant operation. Latched connectors cannot prevent abrasion or heating along an unsupported section that was displaced during the mechanical repair.
- 70. A** — The barrier arrangement must be physically restored as specified before re-energization. Fastener presence and normal software status do not prove that the cover protects the intended interface. Use the prescribed repair and restoration sequence rather than accepting operation with a known installation defect.
- 71. C** — The message reaches other recipients, while the affected node's local supply fails under load. Restore that power connection before attributing loss of reception to the shared source. An intact-looking fuse cannot establish the quality of its terminal contact or prove operating voltage reaches the module.
- 72. A** — A general wheel movement can arise from more than one support path. The isolated hub result passes while the specific joint test fails, directing repair assessment to the ball joint. Do not let a broad symptom override the tests that separate its possible mechanical sources.
- 73. B** — Divide the measured 1,260 m travel by six hundred revolutions to obtain 2.10 m per revolution. The quantities come from the same stated test. The reciprocal represents revolutions per metre and would not answer the requested circumference comparison for the wheel-speed assessment.
- 74. D** — The secondary catch fails its own required test despite successful primary retention and acceptable striker alignment. Restore that mechanism under the closure procedure. One working latch stage cannot establish complete hood safety, and a primary pass does not override a stuck secondary device.
- 75. A** — The fault appears under the condition that makes the positive path fail its voltage-loss criterion. Investigate that connection rather than extending an unloaded pass to loaded performance. Verified alternator output and ground checks narrow the problem but do not establish that generated current reaches the battery with acceptable loss.
- 76. B** — The gear-pattern test and bearing test answer different questions. The acceptable pattern does not override rough bearing operation compatible with the growl. Assess and repair the failed bearing condition under the axle procedure, then verify the loaded complaint instead of treating one passed geometric test as proof of the entire assembly.
- 77. C** — The defined identifier, content and protocol allow relevant modules to interpret the message's information. Receipt is not automatically a repair verdict or proof of normal bus wiring. A data message also does not replace an electrical termination test; evaluate source, content and delivery within the actual vehicle network arrangement.
- 78. B** — The noise follows a localized loose clip and disappears after its controlled correction. That supports the trim-retention contribution without condemning working accessories. An aligned-looking

panel can still have an unsecured contact, so exterior fit is not proof that every retainer holds correctly under vibration.

79. D — Cold heat-transfer surfaces do not establish that cooled air can reach the cabin. The confirmed outlet obstruction is compatible with low delivery despite passing fan and filter checks. Restore the air path and verify performance before treating the complaint as proof of a refrigerant fault.

80. A — The actual valve remains mechanically open despite a valid closure command and supply. Investigate that sticking condition under the repair requirements. Feedback by itself can have faults, but the physical confirmation makes this conclusion stronger than relying on the displayed position alone.

81. C — The terminal must remain correctly retained during service, not merely pass one static reading. Restore the specified retention and contact method. A latched housing can still contain a loose terminal, and an oversized pin can introduce additional damage rather than provide the approved engagement geometry.

82. C — The controlled exchange changes the direction of the complaint while the stated competing checks pass, supporting a tire-related influence. Equal pressure does not establish identical tire force behaviour. Confirm the actual assembly condition rather than setting alignment outside its specification to compensate for the observed tire-following effect.

83. D — The repaired joint needs its actual circuit's approved restoration and test conditions, including protection of nearby equipment. Reservoir level and exterior dryness do not establish every sealed boundary. A generic higher-pressure test can depart from the component requirements, so use the specified method rather than increasing pressure without authorization.

84. A — The fastener's seat and thread relationships matter to the complete wheel joint. External hex size and hand engagement do not establish compatibility. An unapproved washer changes the assembly, so use the specified component and method rather than adapting a visibly similar fastener without authorized criteria.

85. B — The outside micrometer measures the distance between its contact faces when properly applied and verified. That establishes a dimensional reading, not oil chemistry or rotational speed. Measurement accuracy still depends on its reference check, contact technique and the inspection conditions specified for the journal.

86. A — The actual temperature and scan value disagree, and the open signal path supplies a focused electrical lead after reference and ground pass. Restore that path under the diagnostic procedure. The rich complaint is consistent with incorrect temperature information, but the data must be interpreted using this sensor circuit's specified response to an open.

87. C — The same received value reaches multiple working paths but conflicts with the physical input, focusing investigation on the source's measurement or interpretation. An expected identifier establishes message identity, not content accuracy. Verify the source data path before replacing recipients that agree on the information actually transmitted.

- 88. B** — Divide one hundred bits by the 0.0002-second interval to obtain 500,000 bits per second. This interprets the supplied capture model, not a universal vehicle-network speed. The same time basis must be used; substituting milliseconds without conversion would change the calculated rate by a factor of one thousand.
- 89. D** — The bonding system's instructions define its preparation and release conditions. A visibly seated or briefly watertight glass does not establish the adhesive's required cured state. Follow the actual product and vehicle requirements rather than transferring a waiting period from a different system.
- 90. D** — The orientation requirement defines how the component operates within the clutch assembly. Matching holes and new condition cannot waive that relationship. Use the instructions for the actual part and verify the required clearance rather than choosing a side solely because it appears easier to install.
- 91. C** — The adapter has introduced a physical contact defect and must not continue damaging the vehicle connector. Remove it and restore the approved terminal condition. Scan-tool power proves only some connection paths; it does not establish that every spread terminal remains reliable under service movement.
- 92. A** — The holder is part of the current path and needs repair or replacement under its acceptance criteria as well as the correct protective device. A fresh fuse cannot restore heat-damaged contact geometry. Raising its rating does not correct the loose connection or preserve the original circuit protection basis.
- 93. B** — The bearing's installed position and retention each need verification under the repair procedure. Prior free movement does not establish final assembly condition. Press capacity and maximum insertion are not substitutes for the specified seating reference or the component that secures it in service.
- 94. A** — The specified loaded position forms part of the bushing installation method. Establish it before final tightening rather than relying on exterior fastener similarity. Additional torque cannot recreate the intended mechanical relationship if the component was fixed at a different suspension state.
- 95. B** — Lifting points and mechanical retention are distinct requirements in the stated procedure. Engage and verify the required support state before access. A steady hydraulic indication and an electrical stop do not independently provide the mechanical holding function prescribed for this lift operation.
- 96. D** — The tool repeatedly fails its known reference range, so its apparent production pass cannot establish the part's actual size. Repetition supports consistency, not accuracy. Resolve the instrument and remeasure under the inspection method rather than accepting the displayed result simply because it lies inside the part's stated tolerance.
- 97. C** — The manual and alignment checks establish the required mechanical relationship before the engine is powered. Complete them as prescribed. A matching part number does not prove correct installation, and a short start cannot substitute for a pre-start check intended to detect an unacceptable relationship safely.

98. B — The replacement must restore the mechanical sealing interface and the system's required identification relationship. Matching dimensions does not establish both. Follow the service kit and relearn instructions, then verify the relevant pressure and warning behaviour instead of assuming an installed sensor is automatically recognized correctly.

99. C — The setup entry must match the actual replacement when the vehicle requires that calibration relationship. Mounting and code clearing do not establish it. Verify identity and complete the procedure rather than copying another component's information that may describe a different metering characteristic.

100. A — The camera mounting fails a stated prerequisite even though no current code appears. Restore its physical relationship before the prescribed setup. Electronic status cannot establish bracket geometry, and calibration is not an automatic substitute for a component installed outside the required reference.

101. D — The head must meet its thickness requirement as well as flatness. Resolve the measured nonconformance under the approved repair criteria. A flat surface does not restore removed material, and an unapproved gasket or bolt-load change cannot establish acceptance of a component outside its specified geometry.

102. C — The dropout is reproduced by the physical contact while the power conditions stay valid, linking the fault to the chafed communication path. Follow the wiring repair method and verify it under the relevant movement. An engine mechanical condition does not explain the captured conductor collapse at that localized contact.

103. A — The relevant loaded test reproduces the noise while the competing tire comparison and joint checks do not support those areas. A bearing can behave differently under load, so unloaded smoothness is not complete acceptance evidence. Assess the hub using its prescribed criteria and verify the final complaint condition.

104. B — The release travel meets its criterion, but the disc cannot move correctly along the confirmed damaged splines. That local mechanical restriction is compatible with continued drag. Pedal depression and fork motion do not independently establish free movement at every interface needed for complete clutch release.

105. D — The test directly reproduces leakage at the identified casting crack, while the separate flatness measurement passes. Resolve the crack under the approved head disposition process. A good gasket face does not establish that every pressure boundary within the same component is intact.

106. B — The tie-rod length relationship principally changes toe in the stated steering geometry. Camber, caster and manufactured wheel offset have different control relationships. Follow the vehicle's complete alignment method rather than assuming a toe adjustment repairs loose parts or independently corrects every other angle and steering-centre condition.

107. C — The initialization can establish control references and configuration for the actual installed system. Complete it and verify the relevant functions. A lit display and cleared message prove neither

that each actuator responds correctly nor that the module has the required setup after the power interruption.

108. D — The localized functions share a failed ground while requests and positive power are present. Restore and verify that path before assuming two independent actuator defects. Operation elsewhere does not prove this door's connection, but it helps distinguish a local shared-path problem from a total vehicle-wide power loss.

109. A — The seal retains the designated fluid at its mating interface. Bearing preload, lubricant properties and electronic shift commands are different driveline requirements. Correct physical fit alone cannot prove a sound repair if the shaft surface or placement is damaged, so verify the complete specified sealing relationship.

110. A — The leak creates an active fuel and ignition interaction that needs the workplace's response controls before inspection proceeds. Absorbent material can be part of cleanup but does not establish that ignition exposure and vapours are controlled. More heating would not repair the source or make its release safe.

111. D — Material suitability and external leak tightness do not establish an open vapour path through a kinked hose. Restore the approved route and perform the required system checks. Correct clamps cannot remove a geometric obstruction left elsewhere in the replacement installation.

112. B — The engine can communicate through the direct path, while the gateway lacks its required supply condition. Restore that prerequisite before evaluating its routing behaviour. A successful direct test does not prove a different device can operate correctly or forward messages while underpowered.

113. C — The joint needs its required sealing component, preparation and loading relationship. Follow that method before the applicable leak checks. Extra torque and an arbitrary material change cannot establish correct sealing, while hand feel does not provide the stated tightening evidence required for this fitting.

114. D — The restriction test fails and the controlled repair restores the pressure and complaint under the relevant load. That supports a fuel-delivery contribution by the blocked element. The comparison should be followed by final verification rather than extended into a claim that every possible power-loss source has been independently tested.

115. A — Multiply the perpendicular 150 N force by the 0.40 m lever arm to obtain sixty newton-metres. The perpendicular condition avoids an additional angle factor. This interprets the supplied tightening model; actual fastener acceptance must use the approved calibrated tool and component-specific assembly requirement.

116. C — Subtract the load-side ten-point-four-volt reading from the twelve-point-eight-volt source to obtain 2.4 V difference. The common verified reference permits this comparison. It measures the reduction between the supplied points, not the identity of a particular failed connection without additional path checks.

117. B — The metering arrangement controls refrigerant flow into the evaporator and the designated reduction from high-side conditions. Compressor pressure increase and condenser heat rejection are different cycle functions. Correct metering still depends on the actual device, command or sensing arrangement and operating conditions specified for the system.

118. D — The friction part must suit the actual caliper and service specification. Similar length and new condition do not establish compatibility. Removing material to make an unapproved part fit cannot demonstrate correct support or contact, so verify the designated replacement before completing the brake assembly.

119. C — The hose needs suitable clearance throughout the specified movement envelope, not just at centre. Restore its correct route and supports before final checks. Clamp force does not move a wrongly positioned hose to its approved path, and limiting steering to accommodate interference changes the vehicle rather than repairing the installation.

120. B — The hose must suit the fuel, pressure, temperature and installation requirements, not only match the connections. Shortening or externally covering it does not establish the wetted material's compatibility. Verify the approved assembly before the repaired fuel path is placed in service.

121. A — The wheel report becomes implausible while motion continues, and the identified sensor gap fails its criterion. Investigate that input and resulting control behaviour. A pulsation alone could have other causes, but the simultaneous data and gap evidence provide a more specific lead than assuming rotor variation without a supporting measurement.

122. C — The expected waveform reaches the module, so an absent source or open delivery path is not supported by the supplied check. Investigate how that particular input is interpreted under the diagnostic instructions. Other changing inputs show some module activity but do not prove this channel's configuration or processing is correct.

123. D — The wet-test change and dominant crankcase leakage both support the piston-and-cylinder sealing path. Verified timing and minor valve-path flow weaken those alternatives. Improvement does not make the cylinder normal; use the combined evidence to guide the next inspection without declaring a particular ring or bore defect from one test alone.

124. A — Subtract the measured journal diameter, 59.96 mm, from the 60.02 mm housing dimension to obtain 0.06 mm diametral clearance under the supplied model. Half that would describe a radial relationship, not the requested diameter difference. Actual bearing acceptance must use the engine's prescribed assembled measuring method.

125. B — The separate checks can reveal different operating conditions, so follow the prescribed method for each rather than choosing only the easiest result. A broad noise description does not identify its source. Use the actual evidence and relevant load state before deciding whether the bearing meets its acceptance criteria.